

4. *Phosphorus Metallorum.*

**T**ake *Lapis Smaragdi Mineralis* (such as is found in the Mines of *Saxony*) and beat it into a very fine Powder.

If you strew this very fine on any Metal, and in any Figure, and set the Plate on any hot Coals, in a short time you will perceive in the Dark, a Light to shine, which will (saith my Author) last as long as you continue the hot Coals, and if you beat out the Fire, it may do again for once or twice, but then the Vertue will fade.

V. *Part of Two Letters from Dr. Cay, to Dr. Martin Lister, Fellow of the Colledge of Physicians and Royal Society; concerning some Mineral Waters.*

**I** Had a Mineral Water sent me, not long since, by Mr. *Duncan* (a Surgeon in *Alnseick*, pretty well known for his Skill in his own Profession) which he desired me to examine, and give him an account of. Accordingly I first try'd it after the usual manner, with Galls, and found it turn'd almost quite Black, though it had been brought at least Thirty Miles by Land-carriage from *Eglingham* in *Northumberland*: But if this deep Colour was somewhat of a Surprise to me (for it was deeper than that of any atramentous Water, I had ever met with before) yet you'll easily imagine, that I was much more surpriz'd to find, after I had slowly, in a Glass, evaporated more than one half of this Water, that  
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it still retain'd the same atramentous Quality, and struck yet as deep with Galls as ever. The strangeness of this Phænomenon made me hope to meet with somewhat new and uncommon in this Water; and the Event did not deceive me, for it yielded me, at last, a real and genuine Vitriol. I say nothing of the Ocre which this Water let fall in very great Plenty, that being a thing common to all atramentous Waters.

It's strange, how the Thoughts of having found out some new thing, that has escap'd the Eyes and Observations of all Mankind besides, does sooth the Vanity of our Natures: The Appearance of a new Phænomenon makes us think of nothing but setting up for Authors of some new Hypothesis, and while we give not our Thoughts time to cool, and calmly to deliberate, we over-look a great many things, which, in cold Blood, we would have thought necessary to have been enquired after; and thus in our Haste and Transport, for the most part, we lose our selves, and leap over the Truth.

Though I was as ready as others to congratulate myself for having met with a thing that seemed odd enough, yet I had still some secret Suspicions of this Matter, that kept me from confidently affirming that I had met with a Spring that held real Vitriol: I could not bring myself to think it possible, that the Pyrites, lying constantly under Water, should ever yield Vitriol; and I knew of nothing else (at least in *England*) that I could expect it from: And for the *Mist*, *Sory*, *Chalcites*, and *Melanteria* (of some of which Vitriol is made in other parts of the World, as *Agricola*, *Caneparius*, and others inform us) though the Account we have of 'em from the Ancients is very much confus'd, and sometimes seems to be inconsistent, and what the Moderns say in this matter is but an imperfect Transcript of what the Ancients have said before, yet if any thing can be gathered out of their

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Accounts of these Stones, it seems to me to be this, that they are all but different sorts of the *Pyrites* : But if I be mistaken in this Matter, I desire that you would set me right, and inform me better. But however this may be, though these things had their weight with me, yet another thing seem'd still to increase my Suspensions ; I could scarce bring my self to believe that a thing of this Nature, should not only escape your Observation, but the united Observations of the Gentlemen of the *Royal Academy* in *France* ; and that after all, That, which could neither be found by you in *England*, nor by them in *France*, should so nicely reserve it self, only to be discovered at last by Dr. *Leigh* in *Lancashire*, and by me in *Northumberland*. But to put an end to all doubting in this Matter, having lately some Business that call'd me within Four or Five Miles of *Eglingham*, my Curiosity led me to visit this notable Well ; and as I am too much a Friend to Dr. *Lister*, and the Truth, to conceal any thing that I saw ; so, to tell the whole Matter, I found our mighty Rarity, our Vitriol-Water to be only an old Drift made for the draining of a Row of old-wrought Coal-Pits a little above, and I inform'd my self from some old Men, that had formerly wrought in these Pits, that there was plenty of the *Pyrites* there, by them call'd, Brass Lumps ; and that this Drift was sometimes dry, and sometimes run with a plentiful Stream ; which is as fair and full an Account how this Water comes to have Vitriol in it, as any one need to desire : If this, after all, must be reckon'd a Spring, we have yet a Variety of Medicated Springs, which Dr. *Leigh* takes no notice of, in *Lancashire*. Our Common Shores are sometimes strongly enough impregnated with Volatile Salt, to give Name to a new *Classis* of Urinous Springs ; and it's to be wonder'd that *Kircher* reckon'd not the *Cloaca maxima* of *Rome*, among the medicated Springs of *Italy*. So much

am I of your Opinion in this thing, That this is (as you handsomly call these Places in your *Dissertation de Diabete*) only *Fons per accidens*, & *Sentina* sive *Cloaca potius quam Fons medicatus appellanda*.

*New-castle, April 29. 1698.*

### *The Second Letter.*

**I**N my last I gave you an Account of a Water taken up near *Eglingham* in *Northumberland*, which holds real Vitriol, which nevertheless shakes nothing that you have said concerning the Pyrites, since 'tis no Spring but a Current of Water that runs through a Coal-Drift, and that sometimes with so small and low a Stream, that the Pyrites (which abounds in most Coal-Pits, but particularly in these) has leave to lye dry above Water and to germinate, till a wet Season brings down a more plentiful Run of Water, and washes all away along with it. I told you likewise that I suspected the *Fons Vitriolaceus*, near *Haigh* in *Lancashire*, to be much what such another Water, and find I was not much mistaken, for having been there lately, and made very particular Enquiry into the Matter I do assure you, that it is only a Spring which rises in a Coal-Drift (or Water-Level made for the draining of the Cannel Coal-Pits) which is so mix'd with the Coal-Water, that it's next to an Impossibility to separate 'em: So that it's no great Wonder if such a Water should yield Vitriol, as many of our Coal-Waters do: though why such sort of Drains should not rather pass for Common-shores (as you handsomly call 'em) than Medicated Springs, I see not; and think the Gentleman who was Godfather to this, might with as good Reason reckon

reckon the *Cloaca maxima* of *Rome*, among the Medicated Waters of *Italy*.

That he has a peculiar Way of multiplying medicated Springs, you'll believe, when I tell you that he reckons one Water among his *Lancashire Fontes Medicati*, which neither is medicated, nor so much as a Spring at all; but, as I remember, (for 'tis near Five Years since I saw it) a meer Day-Water, that has no other Spring nor Supply, but immediately from the Clouds.

The Water which I mean is, his *Fons Sulphureus* near *Wigan*, which (because of its catching Fire at a lighted Candle) he calls by the Name of *Phosphorus Aquaticus*: (though after all, it is not the Water but a *Halitus* which breaks out at the Bottom of the Hole, after most of the Water, or all the Water is thrown out, which catches Fire.) But this is much such a *Fons Sulphureus*, as his Water near *Boulton* is a *Fons Vitriolaceus*, i. e. *sine Sulphure*, as the other is *sine Vitriolo*. Only with this notable Difference, that the Ochre of the *Boulton* Waters will, after it has been expos'd some time to the Air, yield (as the Ochre of all Atramentous Waters does) some little Vitriol; but this Water, whether expos'd to Fire or Air, will sooner yield Maggots than Brimstone.

But now to let you see that neither *Boulton* nor *Lancashire* are the only Places that produce Wonders, he takes a step into *Derbyshire*, and discovers more Wonders there, than ever were thought to be in the *Peak* before; he finds a Rock there near *Buxton*, which yields Vitriol, where not one Grain of the Pyrites is to be found. Any one that design'd to write with either the Exactness or Sincerity of a Philosopher, would here have given us some Description of this Rock; but that it seems we must not expect from this Gentleman; he contents himself with bare calling it a Rock, and tells us its Parish, and then he has done: I

enquir'd diligently after this Rock, when I was lately at *Buxton*, and was directed to a Place close by the Brook-side, within Three or Fourscore Yards of the House where the Bath is, where I found this Rock to be an Outburst of Allom-stone, it falls in the Air from some little Mixture of the Pyrites, and has in some Places a Copperose Taste pretty strong; but that is no more than what I have found, and you first observed, in the Allom-rocks at *Whitby* and *Gisburgh* in *Yorkshire*. I need not, I know, tell you, how considerable a Quantity of Sulphur may be had from the Allom-Rock, nor how incapable Sulphur is of producing a Vitriol that will strike Black with Galls, without Iron: at least, I know no Mettal that will do it, unless perhaps Gold, (which has several Properties common with Iron) and yet, I believe, the Doctor himself, would no more suspect this Rock of his to hold Gold than Diamonds; and if he allow Sulphur and Iron to be mix'd with this *Aluminis Minera*, it is but needless wrangling to deny the Prefence of the Pyrites, where he allows its Principles.

*New-castle, October 14. 1698.*